

Chapter 3:

Health Care Delivery System

This "Chapter 3" is original to Massachusetts Health Care Trends: 1990-1999.

In many significant ways the health care delivery system in Massachusetts does not look like it did in 1990. The roles of the various stakeholders have blurred over the decade. Health care services are now less institutional, but more aligned into systems and care is dominated by a few huge players on both the finance side and the provider side. Among providers there was almost a Copernican revolution displacing hospitals as the perceived center of the universe, leaving in their place a number of different, usually less acute facilities. Hospitals are now used to provide more costly, intense services in shorter lengths of stay than ever before.

Hospitals, nursing homes and community health centers all experienced closures and system consolidation and ended the decade with fewer acute beds and buildings. In this industry as in so many others, bigness

in one sector (i.e. insurers), begets bigness in others (hospitals, nursing homes, community health centers, physician groups) as a way to counterbalance power and achieve efficiencies, but such benefits are often elusive as many found out by the close of the decade.

The composition of clinicians is changing as well. Data show that newly trained physicians are more likely to go into primary care than their predecessors but still not as likely as their counterparts throughout the United States. Massachusetts remains specialist heavy even as managed care tries to put primary clinicians at the center of a person's care.

The financial story of the three main types of institutional providers is troubling and Figure 2.10 on page 30, Median HMO Profit Margin, rounds out the picture. While somewhat different forces or actions hurt each of them, together they illustrate an under-funded system at risk of or already beginning to unravel.

Although certainly not the only factor explaining poor financial margins, pharmaceutical costs were selected to illustrate the mixed gift of every major advancement in health care. Per capita drug costs have exploded, but advancements in pharmacology have partially enabled our decreased dependence on hospitalization. Does one cost offset the other savings? If not, what is an equitable financing mechanism?

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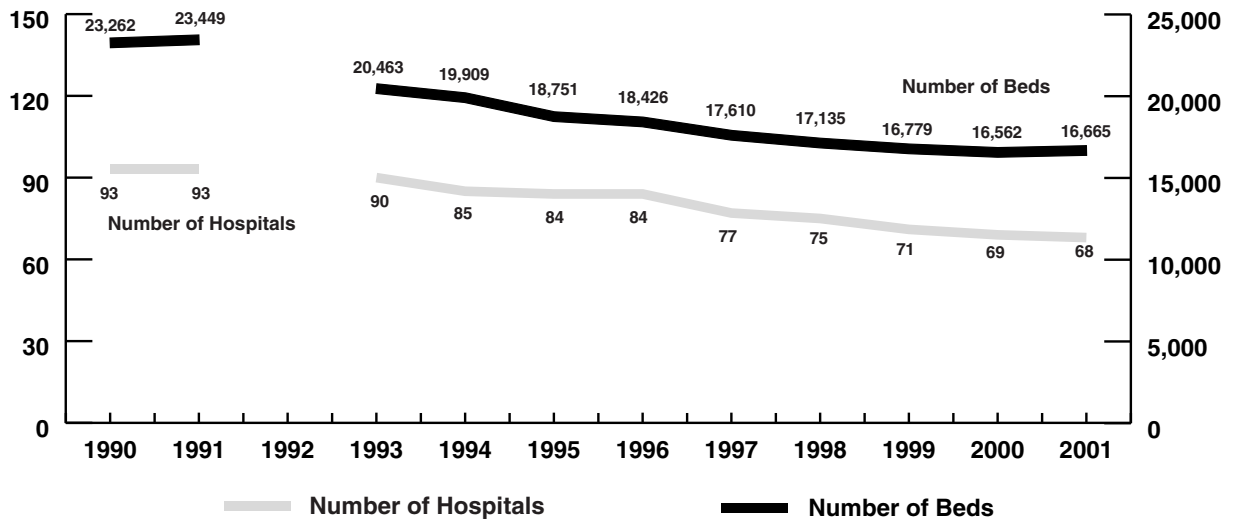
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Number of Acute Hospitals and Available Beds in Massachusetts (1990-2001)



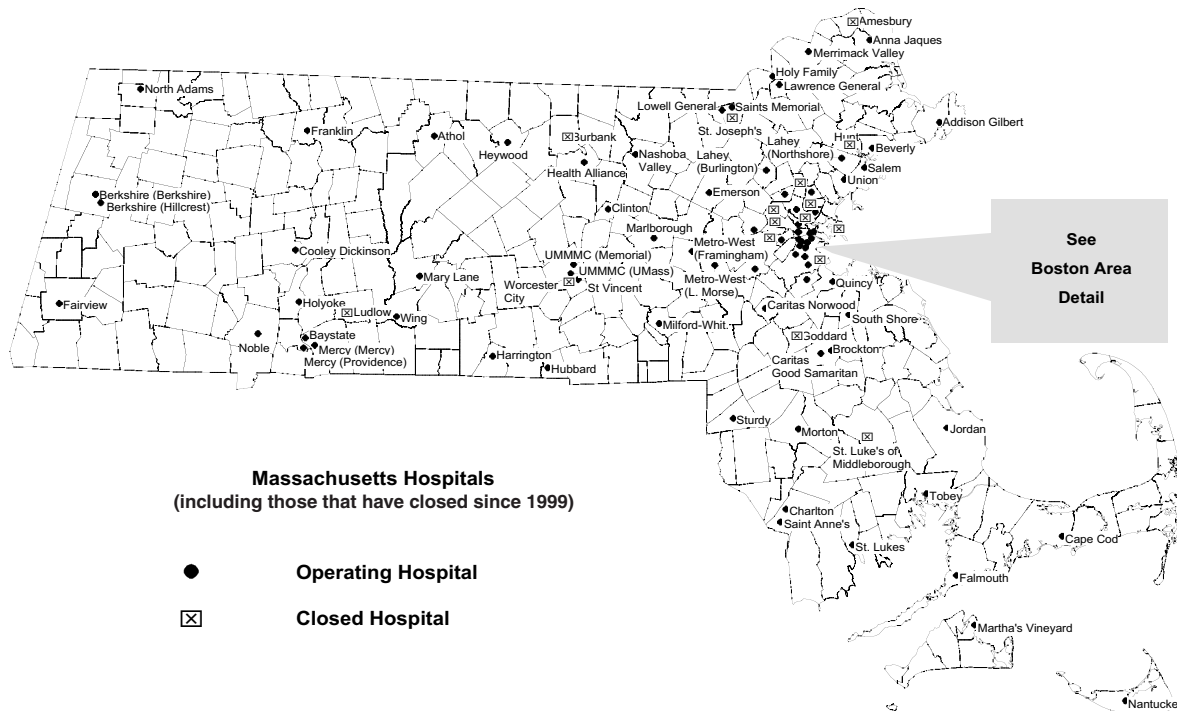
Source: "Hospital Statement for Reimbursement, DHCFP 403," Massachusetts Division of Health Care Finance and Policy

Note: Complete data were unavailable for 1992. Beginning in 2001, the methodology for counting Massachusetts hospital beds changed slightly—it measured "weighted average available beds" instead of "weighted average operational beds"—slightly compromising the comparability to prior years.

Figure 3.1

- Market forces, changing health care financing, and changing service delivery practices have led to dramatic changes in the Massachusetts hospital infrastructure over the last decade. The total number of acute care hospitals fell 27% from 93 to 68; the number of available beds also dropped significantly, though an upturn began in 2001.
- Since the Massachusetts population changed only slightly during this time period, beds per capita decreased significantly.

Massachusetts Acute Hospitals Currently Operating and Closures (2003)



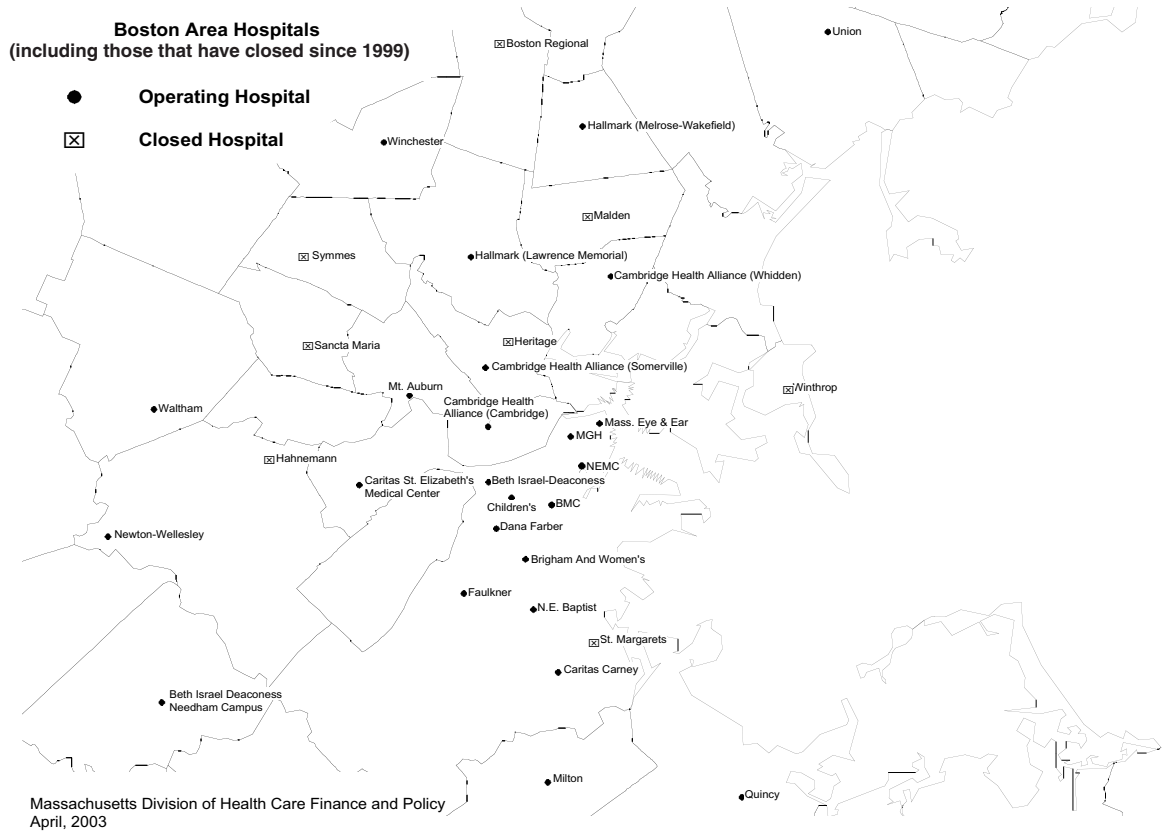
Massachusetts Division of Health Care Finance and Policy
April, 2003

Sources: Massachusetts Division of Health Care Finance and Policy; Massachusetts Hospital Association web site: www.mhaink.org

Figure 3.2A

- In addition to the many hospitals that closed, many others converted to long term care, outpatient facilities or offer only emergency services.
- For the chronology of closures and conversions, see Appendix IV: Acute Hospital Full Asset Mergers, page 93; Appendix V: Hospital Closures as Acute Inpatient Facilities, page 95; and Appendix VI: Hospital Acquisitions, page 97.

Boston Area Acute Hospitals Currently Operating and Closures (2003)

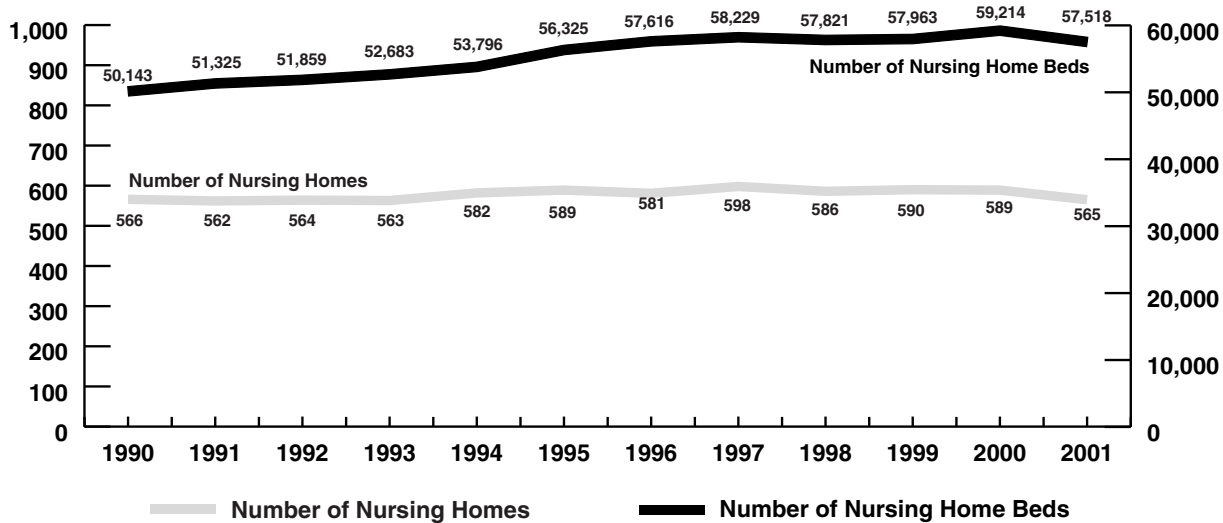


Sources: Massachusetts Division of Health Care Finance and Policy; Massachusetts Hospital Association web site: www.mhalink.org

Figure 3.2B

- In addition to the many hospitals that closed, many others converted to long term care, outpatient facilities or offer only emergency services.
- For the chronology of closures and conversions, see Appendix IV: Acute Hospital Full Asset Mergers, page 93; Appendix V: Hospital Closures as Acute Inpatient Facilities, page 95; and Appendix VI: Hospital Acquisitions, page 97.

Number of Nursing Homes and Number of Licensed Beds in Massachusetts (1990-2001)

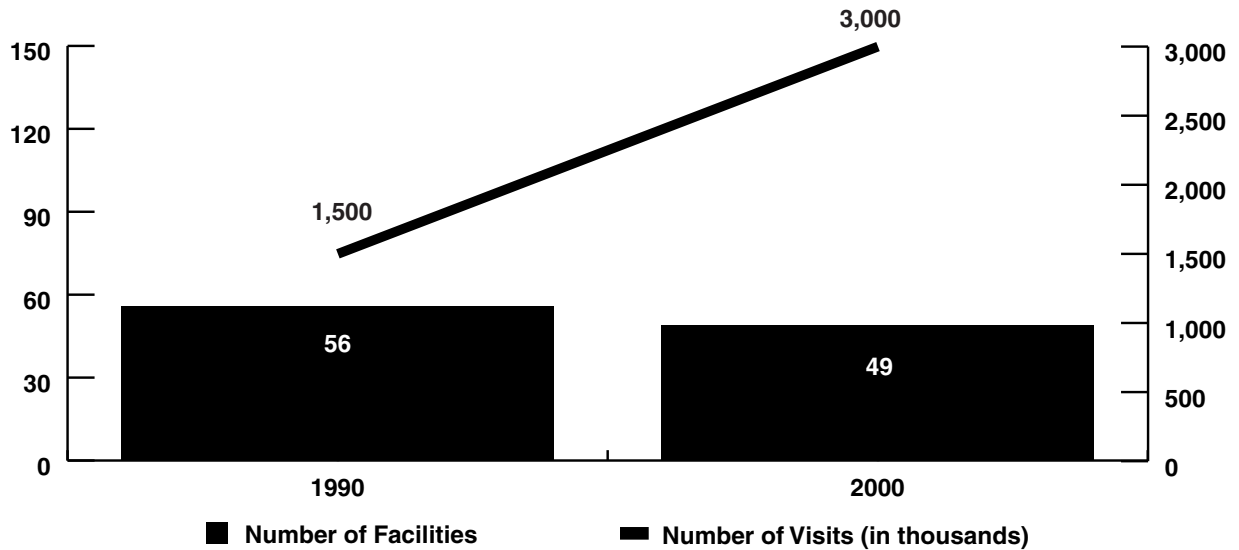


Source: Massachusetts Department of Public Health, Division of Health Care Quality
 Note: Number of licensed (but not necessarily operational) beds.

Figure 3.3

- Unlike the trend in hospital beds (see Figure 3.1 on page 35), the number of nursing home beds rose 15% over the decade (peaking in 2000), while the number of facilities, after increasing, dropped back in 2001 to the 1990 level. Larger-than-average nursing homes survived or were newly opened, while smaller nursing homes closed.¹

Number of Community Health Centers and Total Visits in Massachusetts (1990 and 2000)

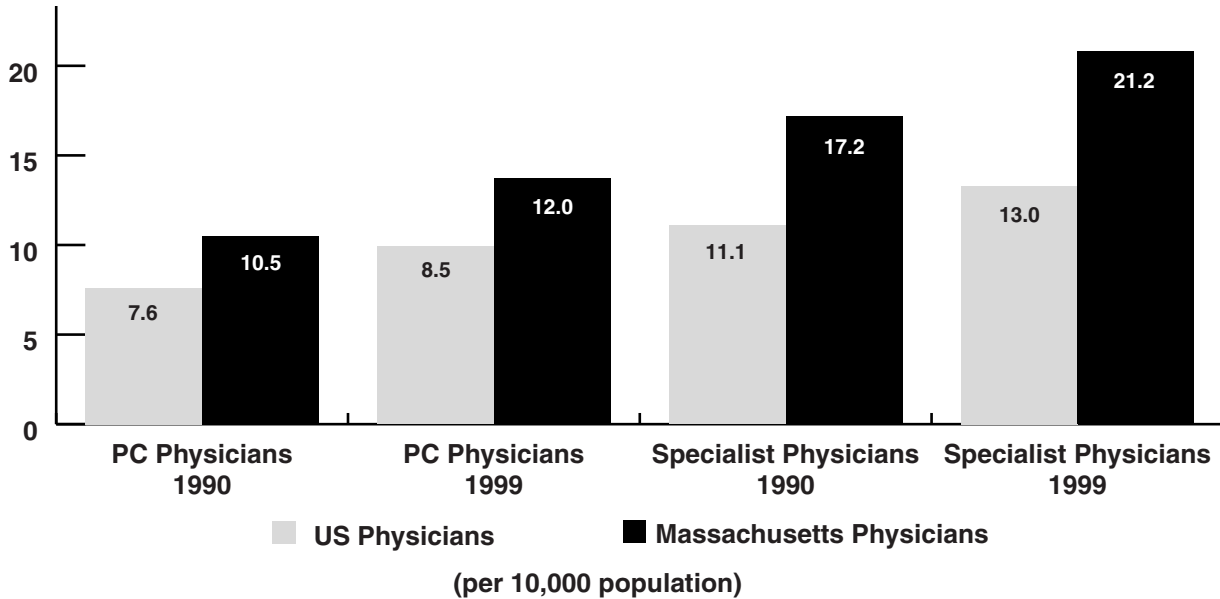


Sources: *MA CHCs in Crisis: Facts, Trends, and Strategic Solutions for Investing in the Safety Net, 2000, 2002 and Transitional Issues Report*, January 1991, Massachusetts League of Community Health Centers

Figure 3.4

- Like the trend experienced by hospitals (see Figure 3.1 on page 35), the number of CHCs declined from 56 to 49 during the 1990s, a decrease of 13%.
- Total CHC patient visits doubled from 1.5 to 3 million visits, paralleling the steep incline in hospital outpatient visits experienced during this time period (see Figure 3.13 on page 48).

Primary Care Physicians and Specialist Physicians per 10,000 Population in the US and Massachusetts (1990 and 1999)

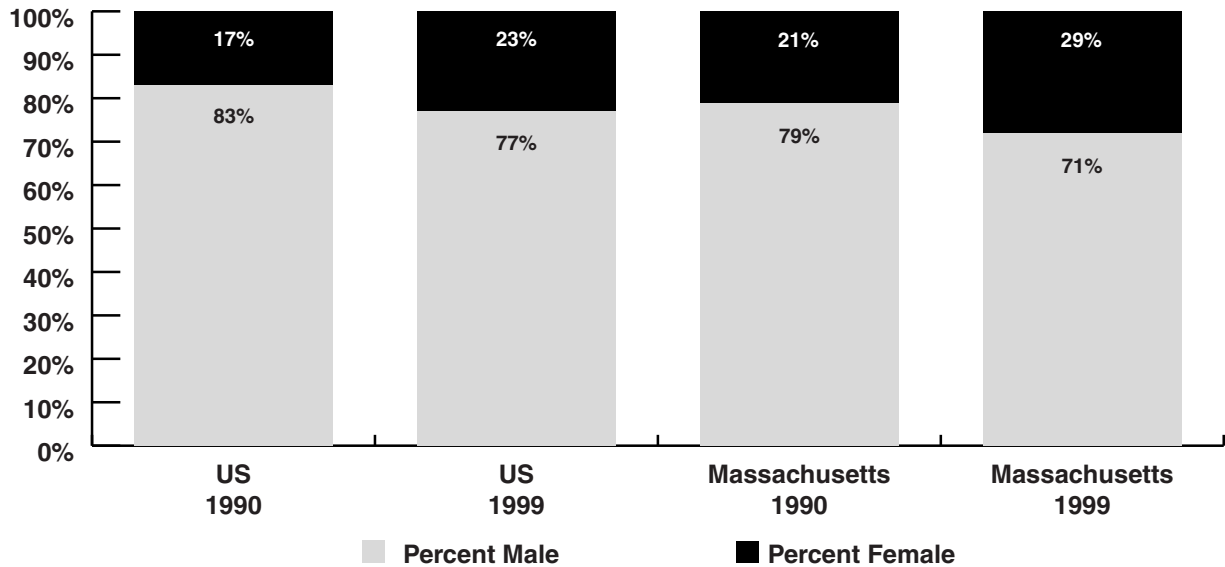


Sources: *Physician Characteristics and Distribution in the US* (1992 edition and 2001-02 edition), American Medical Association; "State Population Estimates: Annual Time Series, July 1, 1990 to July 1, 1999," US Bureau of Census, www.census.gov/population/estimates/state/st-99-3.txt
Note: Primary care physicians include pediatricians, internists, family practitioners and general practitioners.

Figure 3.5

- In both 1990 and 1999, Massachusetts had more physicians per 10,000 population than did the nation overall, particularly specialists.
- The strong presence of specialists in Massachusetts has not decreased, even as managed care has tried to shift much care to primary clinicians, and as medical schools and teaching hospitals have tried to train fewer specialists and more generalists.

Physician Gender Composition in the US and Massachusetts (1990 and 1999)

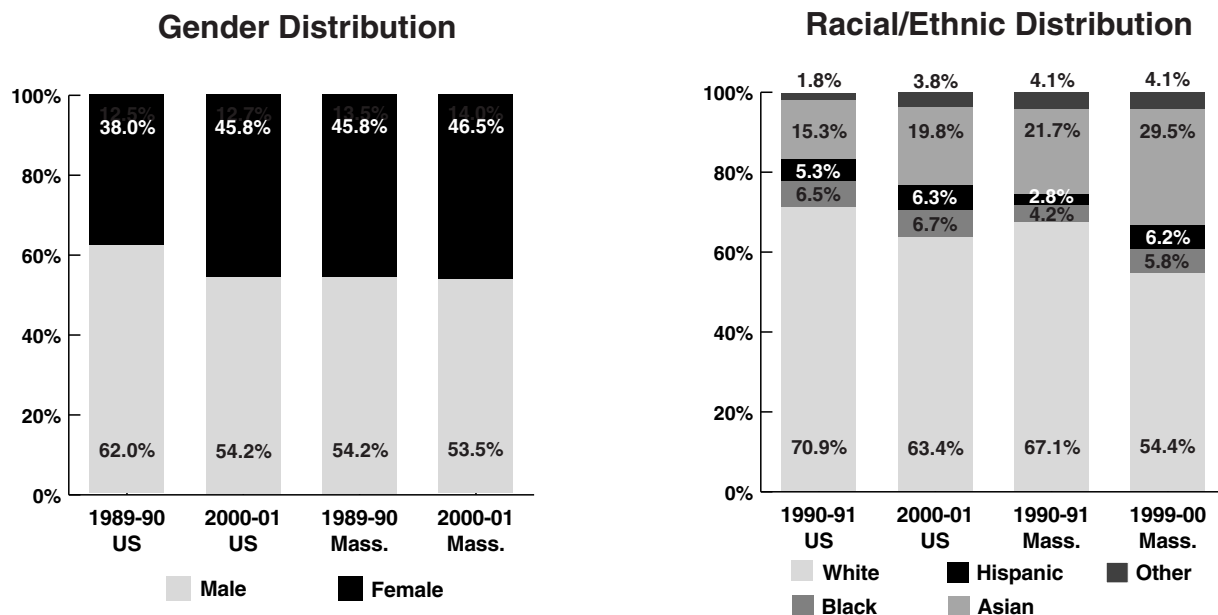


Source: *Physician Characteristics and Distribution in the US* (1992 and 2001-02 editions), American Medical Association

Figure 3.6

- The number of female physicians increased substantially in both the US and Massachusetts over the past nine years.
- In both 1990 and 1999, Massachusetts had a greater proportion of female physicians than the US overall.

Distribution of 1st-Year Medical Students by Gender and Race/Ethnicity in the US and Massachusetts (1989-90 and 2000-01)

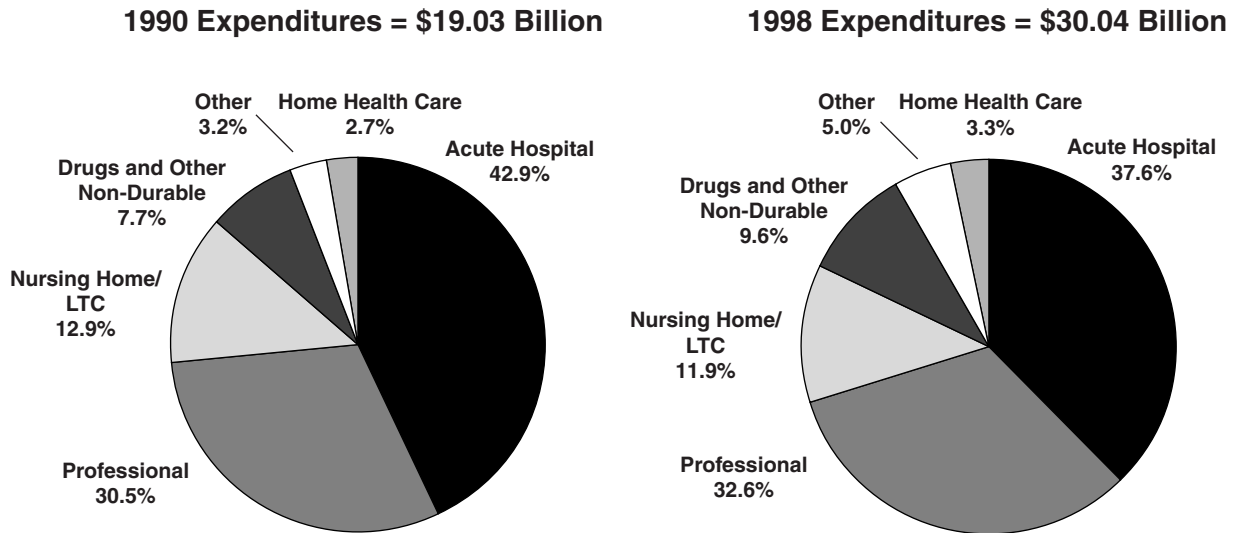


Sources: *Medical School Admission Requirement*, US and Canada, 1991-92 and 2002-03 (editions 41 and 50), Association of American Medical College, Washington, D.C.
 Note: Data from the four Massachusetts medical schools were not available past 1999.

Figure 3.7

- Nationally, there was an eight percentage-point increase in the proportion of women entering medical school, while in Massachusetts the proportion of females entering our four medical schools increased less than one percentage point.
- In the US, all types of minority first-year medical students increased from 1990 to 2000. The same trend occurred in Massachusetts from 1990 to 1999.

Distribution of Health Care Expenditures in Massachusetts (1990 and 1998)

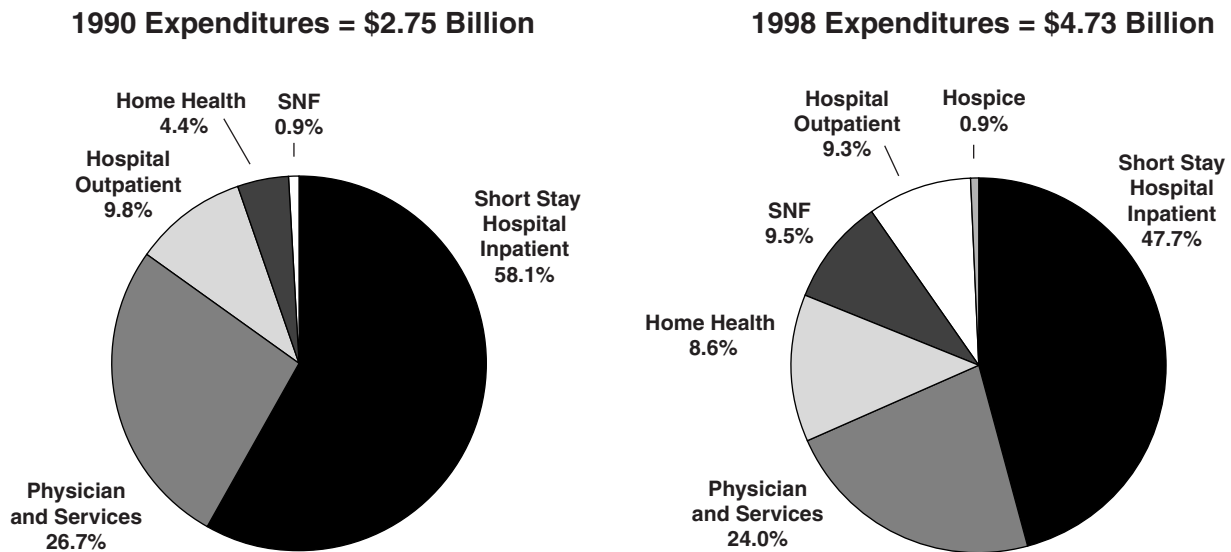


Source: "Massachusetts Health Expenditures, 1980-1998," July 17, 2000, Health Care Financing Administration, Office of the Actuary, National Health Statistics Group
 Note: These numbers have not been adjusted for inflation. CMS only updates state-level information every five years.

Figure 3.8

- In Massachusetts, health care expenditures increased from \$19 billion to \$30 billion over the decade. The proportion of these dollars spent on institutions—nursing homes and hospitals—declined over the decade, while expenditures in all other categories increased.

Distribution of Medicare Expenditures in Massachusetts (1990 and 1998)



Source: *Health Care Financing Review*, Medicare and Medicaid Supplement (1992 and 2000), Health Care Financing Administration

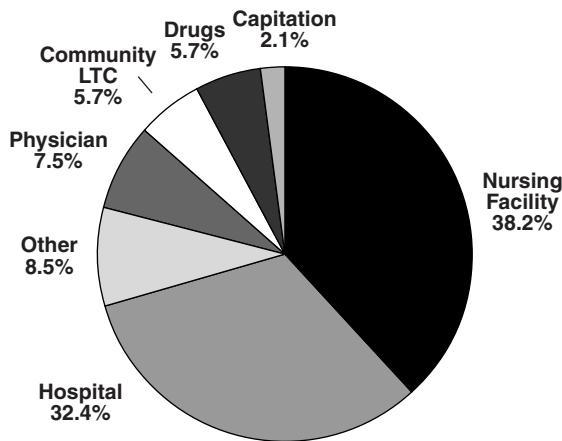
Note: The Medicare expenditure numbers in these charts do not represent complete Medicare expenditures; for example, they exclude amounts paid for managed care services and are limited to only those types of services indicated in the charts. CMS only updates state-level information every five years.

Figure 3.9

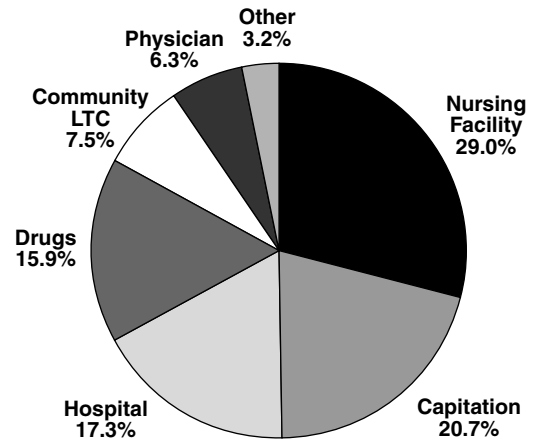
- From 1990 to 1998, total Medicare payments to Massachusetts providers increased 72%. During this time, the proportion of Medicare payments for inpatient hospital care greatly decreased, while skilled nursing facility (SNF) and home health payments increased.²

Distribution of Medicaid Expenditures in Massachusetts (1990 and 2001)

1990 Expenditures = \$2.3 Million



2001 Expenditures = \$4.9 Million



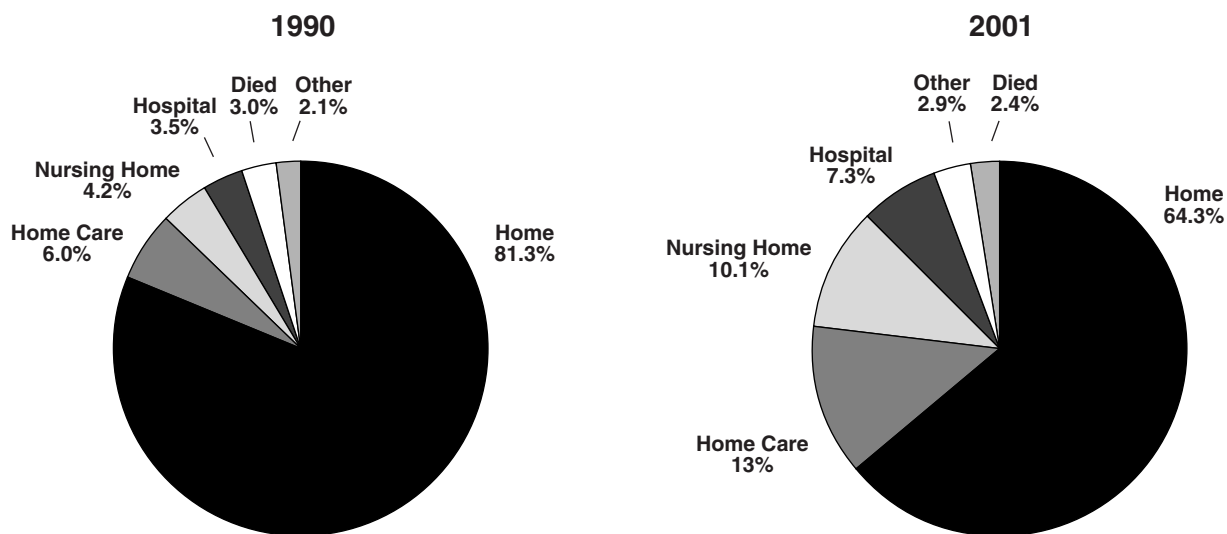
Source: Massachusetts Division of Medical Assistance, Budget Office

Note: These numbers have not been adjusted for inflation.

Figure 3.10

- From 1990 to 2001, total Massachusetts Medicaid expenditures rose 109%. The percent for capitation payments increased ten fold, reflecting Massachusetts Medicaid's increased reliance on managed care.
- During this period Medicaid spent relatively less on nursing facility payments and more on community long term care. Since the increased capitation payment includes expenditures for both hospital and physician care, these two categories in 2001 are not directly comparable to their 1990 level.
- Drug costs almost tripled as a proportion of the Medicaid dollar.

Distribution of Patient Disposition at Discharge from an Acute Hospital in Massachusetts (1990 and 2001)

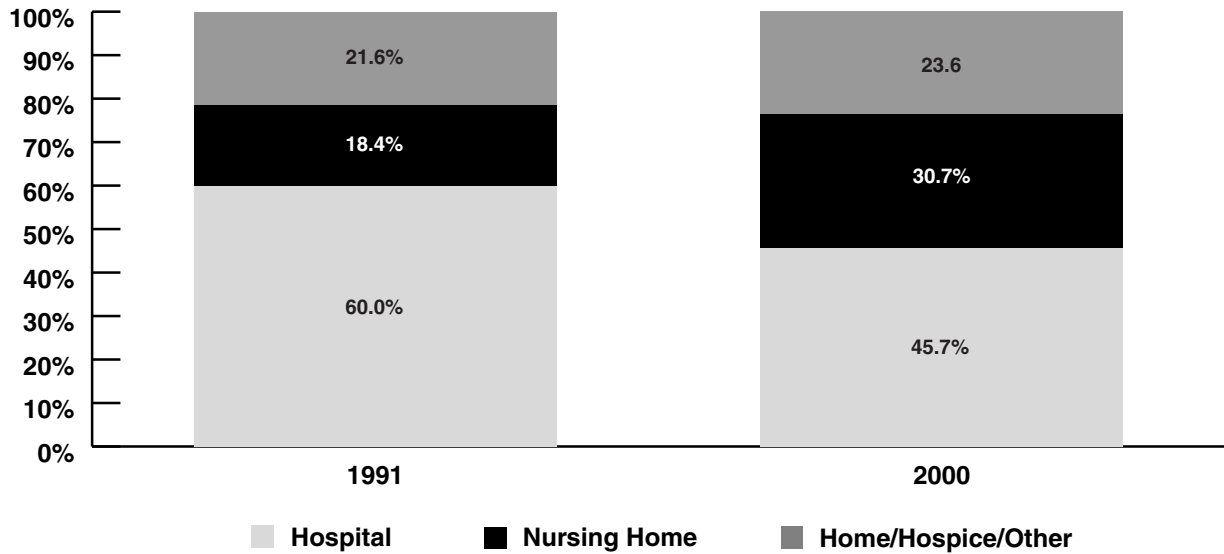


Source: Hospital discharge data, Massachusetts Division of Health Care Finance and Policy

Figure 3.11

- Compared to 1990, in 2001, Massachusetts residents were less likely to be discharged home with no support services after an acute hospital stay. The proportion of inpatients who were sent to nursing homes, sent home with health care services, or sent to another acute or specialty hospital all increased during the decade.
- This trend probably reflects the shortening of the acute hospital stay (see Figure 3.14 on page 49) and the sicker patient hospitalized by the end of the decade (see Figure 3.15 on page 50).

Site of Death of Massachusetts Residents (1991 and 2000)

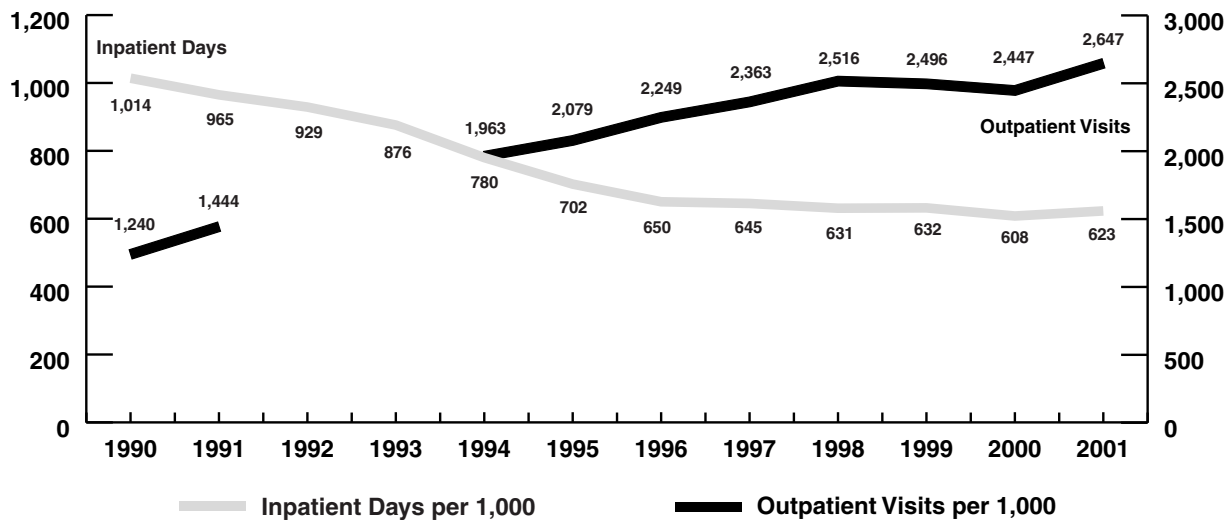


Source: Massachusetts Department of Public Health, Office of Health Statistics, Research and Evaluation

Figure 3.12

- From 1991 to 2000, the likelihood that a nursing home would be the place of death for a Massachusetts resident increased 67%. In contrast, the proportion of Massachusetts residents for whom the hospital was the place of death fell 24%.

Acute Hospital Inpatient Days and Outpatient Visits per 1,000 Population in Massachusetts (1990-2001)



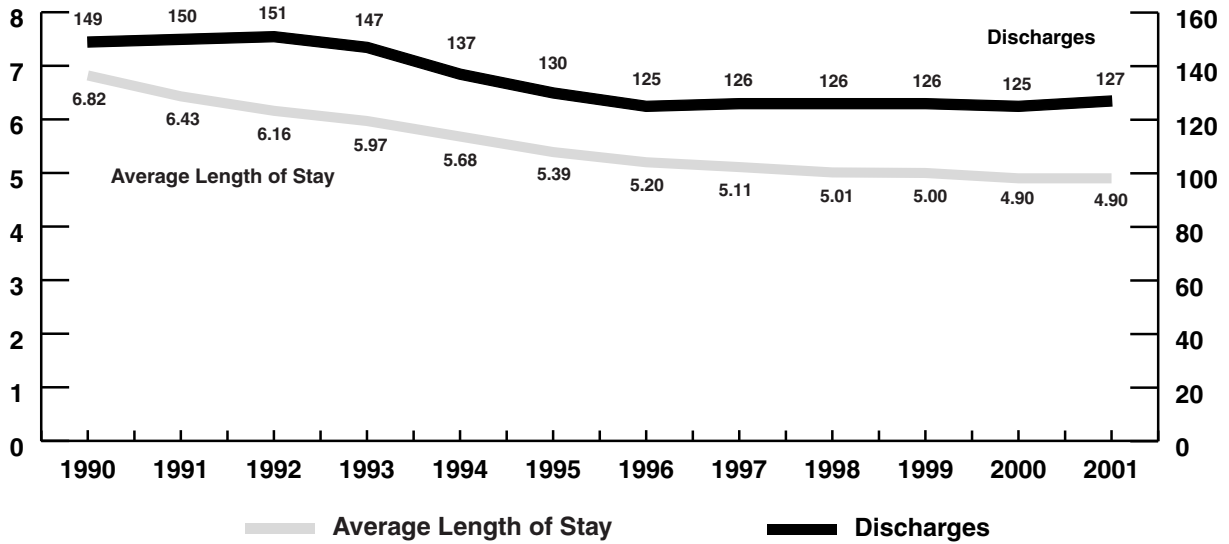
Sources: "Hospital Statement for Reimbursement, DHCFP-403" and hospital discharge data, Massachusetts Division of Health Care Finance and Policy

Note: Complete data were unavailable for 1992 and 1993.

Figure 3.13

- Outpatient visits per 1,000 population more than doubled in Massachusetts between 1990 and 2001. Conversely, inpatient days decreased 39% over this time frame. Inpatient days and outpatient visits trended upward significantly between 2000 and 2001.
- Increased pressure for cost containment in the health care system and improved medical technology and pharmacology facilitated many patients to be managed on an outpatient basis, resulting in dramatic changes in inpatient and outpatient utilization.
- The emergence in the early 1990s of a new type of stay—observation (technically classified as an outpatient stay)—is also partially responsible for the downward trend in inpatient hospital days.

Acute Hospital Discharges per 1,000 Population and Average Length of Stay in Massachusetts (1990-2001)

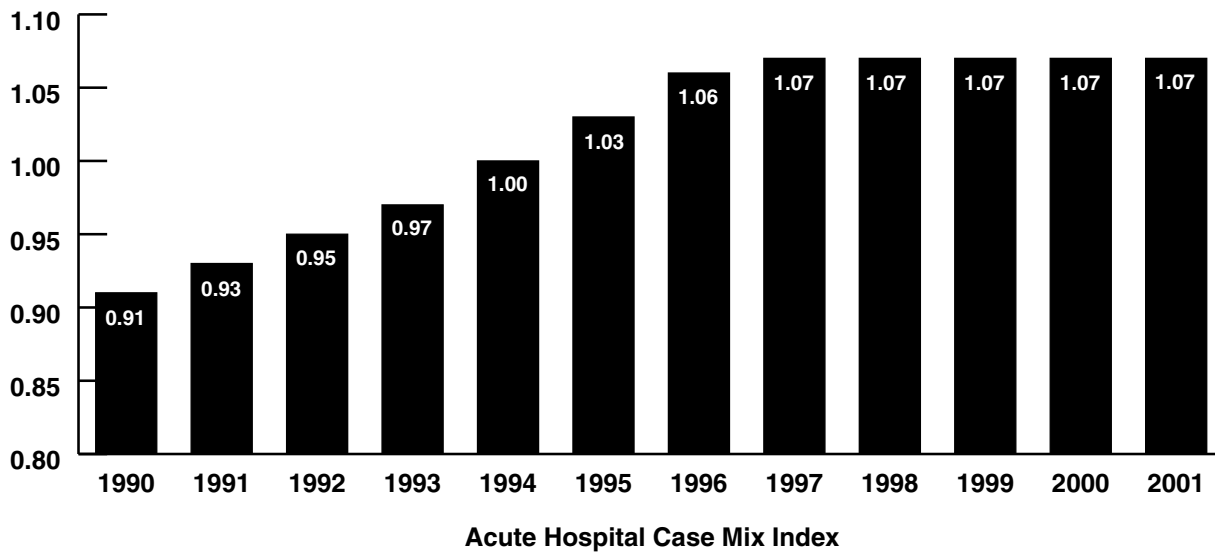


Source: Hospital discharge data, Massachusetts Division of Health Care Finance and Policy

Figure 3.14

- During the last decade, the total number of acute hospital discharges per 1,000 population dropped 15% in Massachusetts. The average length of stay (ALOS) fell 28% during this time period. These trends underscore the changing role hospitals play in health care delivery, which is characterized by fewer admissions and shorter stays when individuals are admitted.

Acute Hospital Case Mix Index (CMI) in Massachusetts (1990-2001)

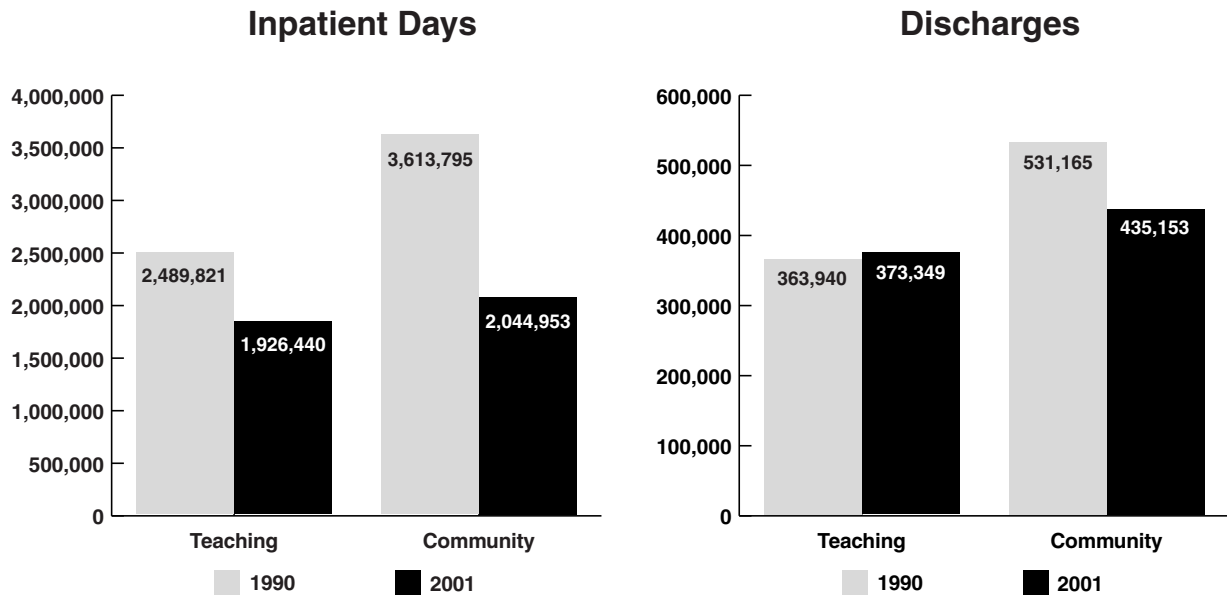


Source: Hospital discharge data, Massachusetts Division of Health Care Finance and Policy

Figure 3.15

- The case mix index (CMI) is a measure of relative resource use in hospital care. The CMI is calculated by assigning a cost weight to all hospital cases. A case costing the average amount of money yields a cost weight of 1.0. As cases increase in cost and complexity, the cost weight assigned to them also increases. To derive the CMI for a given year, one sums up all the cost weighted cases and then divides them by the total number of cases for that year. This indicator may be used as a proxy for the complexity of services used to treat a particular group of patients.
- From 1990 to 2001, the Massachusetts acute hospital CMI increased 18%. Thus, while patients are being admitted to the hospital less frequently and staying shorter periods of time (see Figure 3.14 on page 49), once admitted, the cost and complexity of hospital patients has increased. Some of this increase is explained by the likelihood that less complex cases are being treated in an ambulatory setting, leaving more complex cases to be hospitalized. However, since 1997 there has been no change in the CMI.

Inpatient Days and Discharges for Teaching versus Community Hospitals in Massachusetts (1990 and 2001)

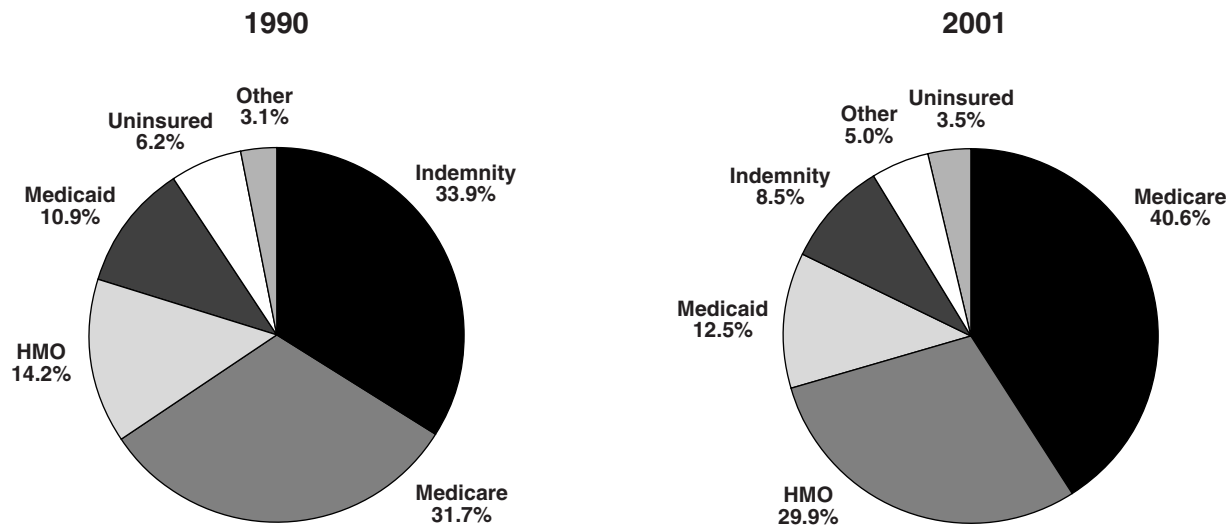


Source: Hospital discharge data, Massachusetts Division of Health Care Finance and Policy

Figure 3.16

- From 1990 to 2001, the number of inpatient days declined at a faster rate for community hospitals, 43%, than for teaching hospitals, 23%. Additionally, inpatient discharges declined 18% for community hospitals but actually increased 3% for teaching hospitals.
- Managed care has been largely unsuccessful in moving primary and secondary care out of teaching hospitals to less expensive community hospitals. This has had an impact on the overall cost of hospital care in Massachusetts.

Acute Hospital Discharges by Payer in Massachusetts (1990 and 2001)

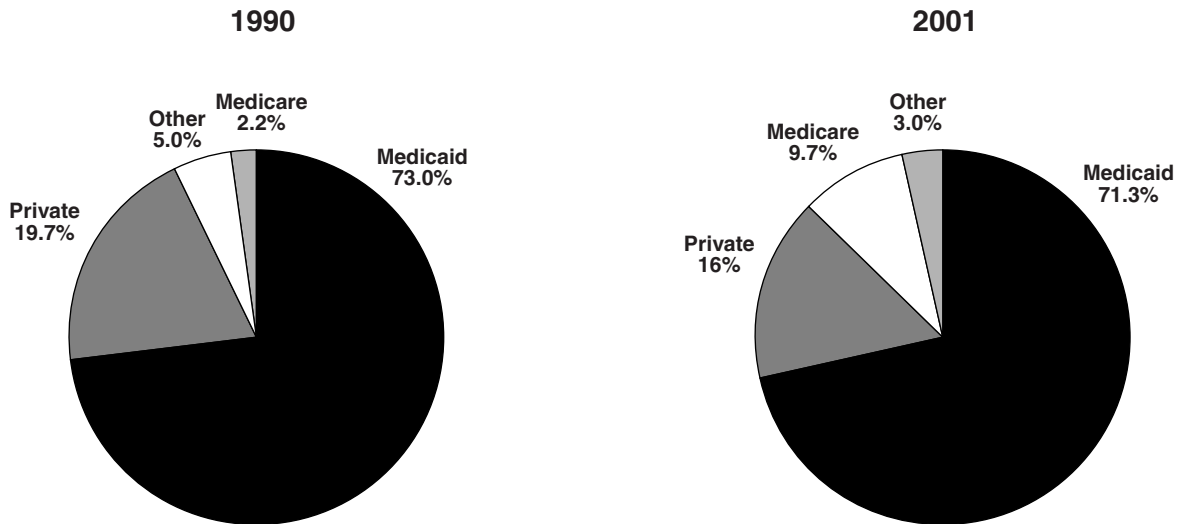


Source: Hospital discharge data, Massachusetts Division of Health Care Finance and Policy

Figure 3.17

- Many payer categories had significant changes in their share of total acute hospital discharges. HMO discharges more than doubled, discharges covered by indemnity payers dropped dramatically from 34% to 8.5%, and the proportion of discharges for individuals without insurance fell from 6.2% to 3.5% of all discharges.

Nursing Home Days by Payer in Massachusetts (1990 and 2001)

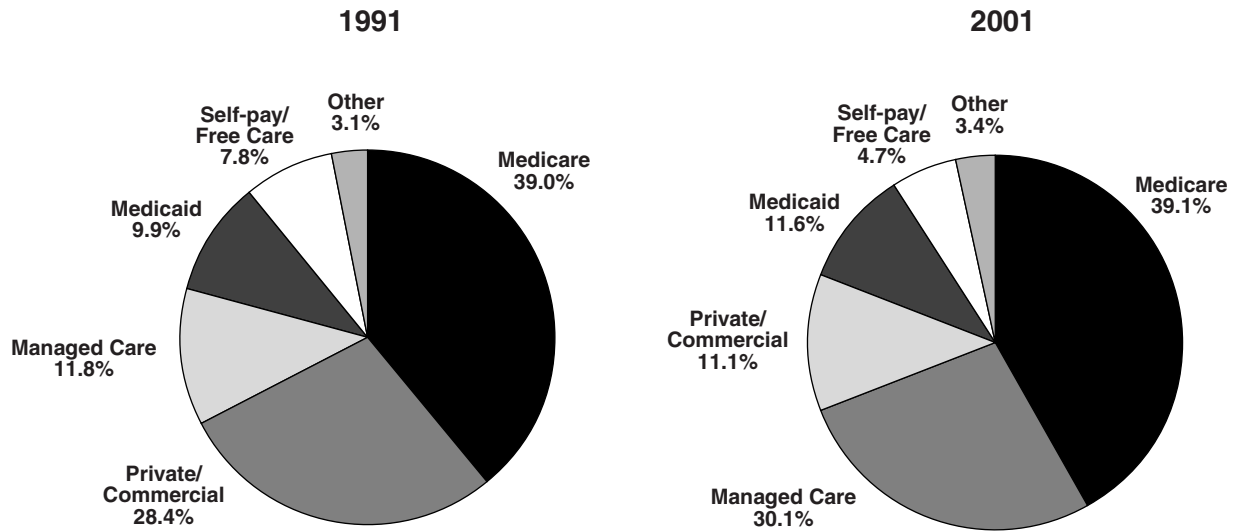


Source: HCF-1 nursing facility cost reports, Massachusetts Division of Health Care Finance and Policy

Figure 3.18

- Medicaid was responsible for proportionately fewer nursing home days in 2001 than it was in 1990, while Medicare represented significantly more. Medicare covers only short-term recuperative nursing home stays.
- See Figure 3.20 on page 55 for balance between share of days and share of revenue.

Distribution of Acute Hospital Revenues by Payment Source in Massachusetts (1991 and 2001)

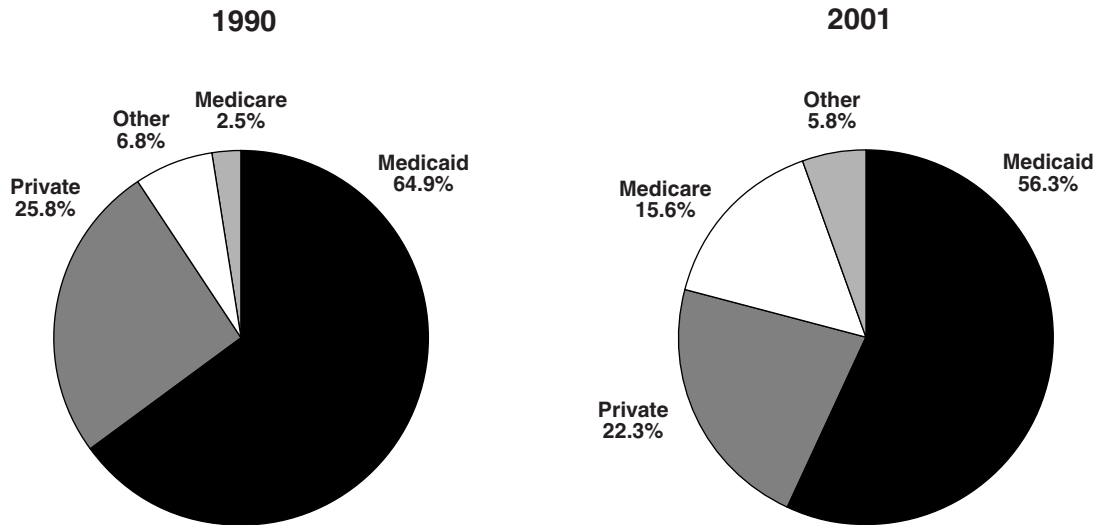


Source: "Hospital Statement for Reimbursement, DHCFP 403," Massachusetts Division of Health Care Finance and Policy

Figure 3.19

- During the decade, hospital revenues from managed care increased tremendously while private/commercial insurers decreased.

Distribution of Nursing Home Revenues by Payment Source in Massachusetts (1990 and 2001)

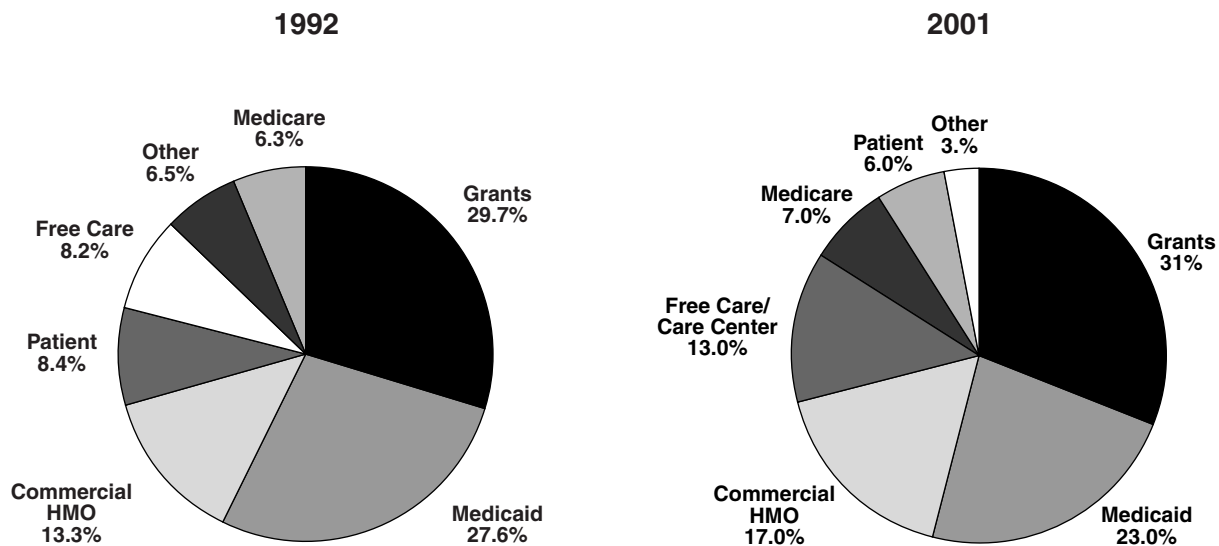


Source: HCF-1 nursing facility cost reports, Massachusetts Division of Health Care Finance and Policy

Figure 3.20

- In 2001, nursing home revenue was comprised of a larger share of Medicare revenues and a smaller share of Medicaid revenues than in 1990. Medicare covers only short-term recuperative nursing home stays. Revenues from other sources remained relatively stable.
- Medicaid patients comprise, by far, the largest portion of nursing home patients, but represent far less of nursing home revenues. For private and Medicare patients, the reverse is true—nursing homes derive more of their revenues than their proportion of patient days from these two payers (see Figure 3.18 on page 53).

Distribution of Community Health Center Revenues by Payment Source in Massachusetts (1992 and 2001)

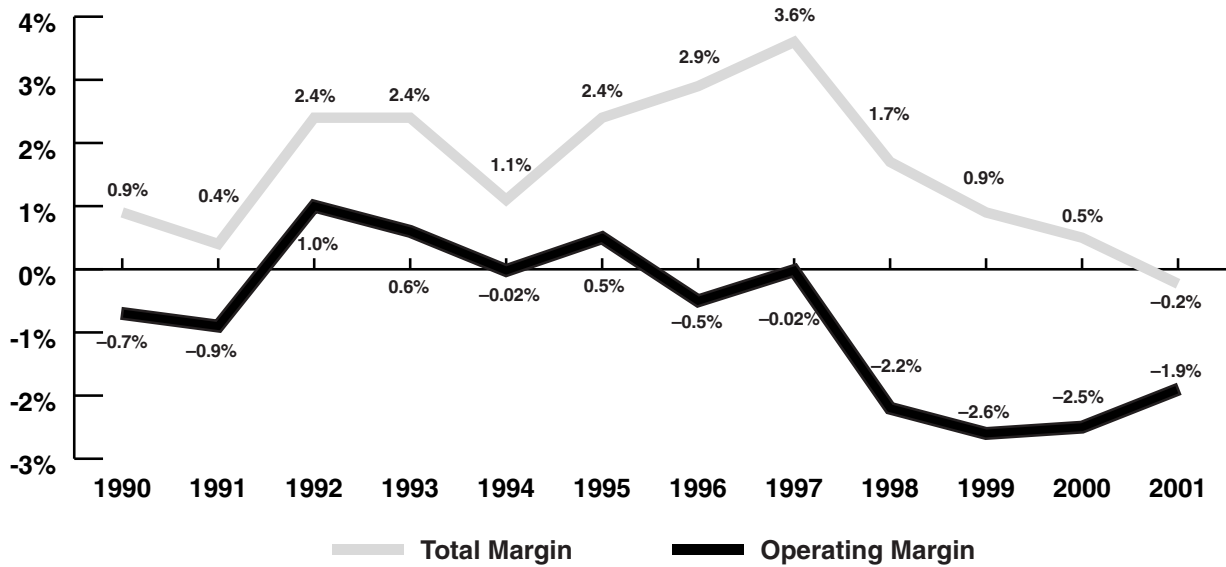


Sources: *Safe Harbors for Patient Care in Health Care Reform*, March 1994 and *MA CHCs in Crisis: Facts, Trends and Strategic Solutions for Investing in the Safety Net*, 2000, 2002, Massachusetts League of Community Health Centers

Figure 3.21

- Between 1992 and 2001, community health center (CHC) revenues became increasingly diversified. Free care as a proportion of CHC revenues increased over the decade. Chapter 495 of the Acts of 1991 allowed CHCs to be reimbursed for free care through the Massachusetts Uncompensated Care Pool.

Total and Operating Margins for Acute Hospitals in Massachusetts (1990-2001)



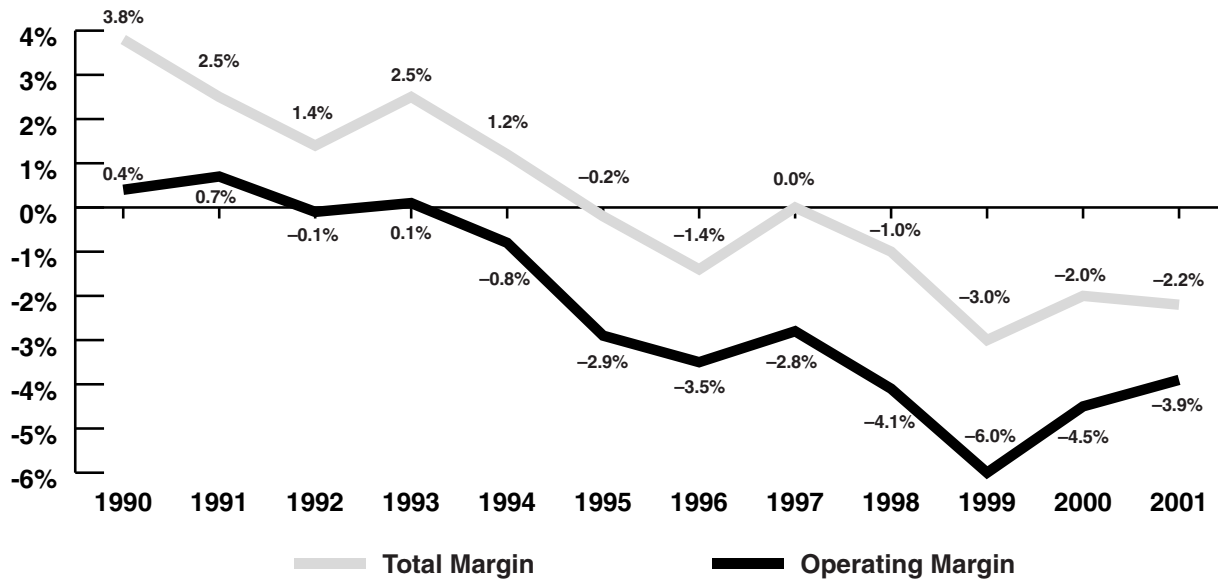
Source: "Hospital Statement for Reimbursement, DHCFP 403" Massachusetts Division of Health Care Finance and Policy

Note: Financial data are often revised based on new information submitted by hospitals. Data from 1990-1999 were accurate as of *Massachusetts Health Care Trends: 1990-1999*. Numbers for 2000 and 2001 are from reviewed financial data and may not have been updated to reflect current knowledge.

Figure 3.22

- The total margin for Massachusetts acute care hospitals fluctuated a great deal during the 1990s, but by the end of the decade declined to 0.4% in 2000, dangerously thin.
- During this same time period, Massachusetts hospitals' operating margin decreased almost four fold from -0.7% to -2.6%.
- Thus, acute hospital operating expenses were not covered by operating revenue by the end of the decade, signaling a dangerous imbalance in hospitals' core business. Revenues from other sources, such as investments, were offsetting these losses, resulting in a small, positive total margin. While not completely responsible for the hospitals' financial troubles, the 1997 passage of the Balanced Budget Act exacerbated those troubles considerably.

Total and Operating Margins for Nursing Facilities in Massachusetts (1990-2001)



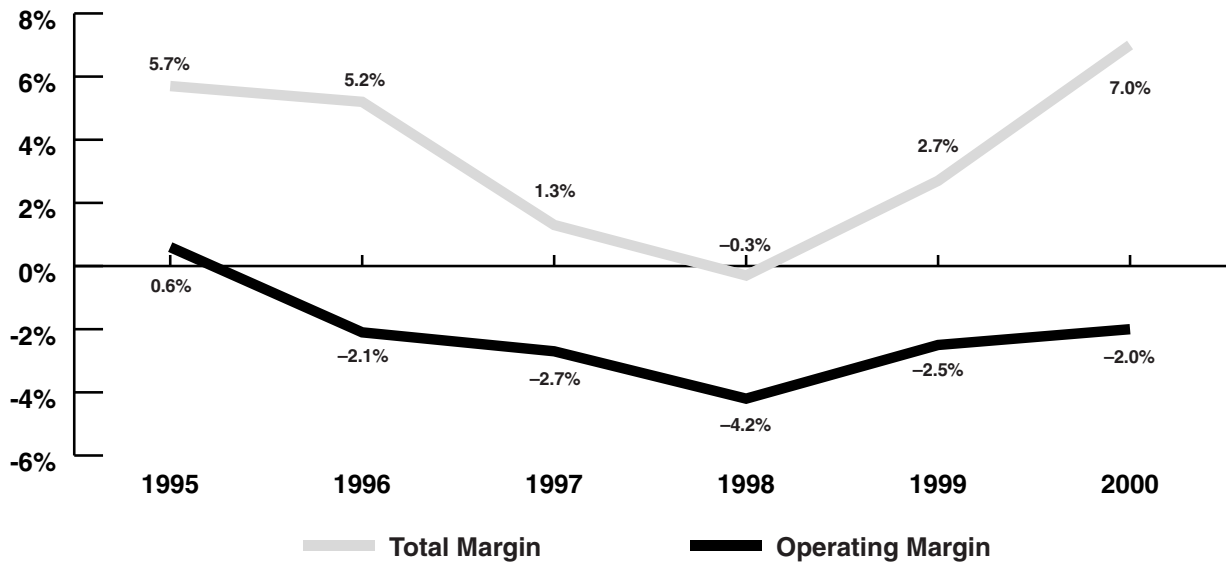
Source: HCF-1 nursing facility cost reports, Massachusetts Division of Health Care Finance and Policy

Note: Financial data is often revised based on new information submitted by nursing facilities. Data from 1990-1999 were accurate as of original publication date of Health Trends. Numbers from 1999, 2000, and 2001 are from reviewed financial data and may not have been updated to reflect current knowledge.

Figure 3.23

- In the last three years, the total margin for Massachusetts nursing homes dropped to historic lows. Thus, as in the case of acute hospitals (see Figure 3.22 on page 57), operating expenses for nursing homes were not covered by operating revenue by the end of the decade. Unlike hospitals, revenue from other sources such as investments did not offset these losses for Massachusetts nursing homes, and some closed.
- Nursing homes, like hospitals, were adversely affected by the Balanced Budget Act of 1997, which reduced Medicare payments to nursing facilities across the Commonwealth.

Total and Operating Margins for Community Health Centers in Massachusetts (1995-2000)

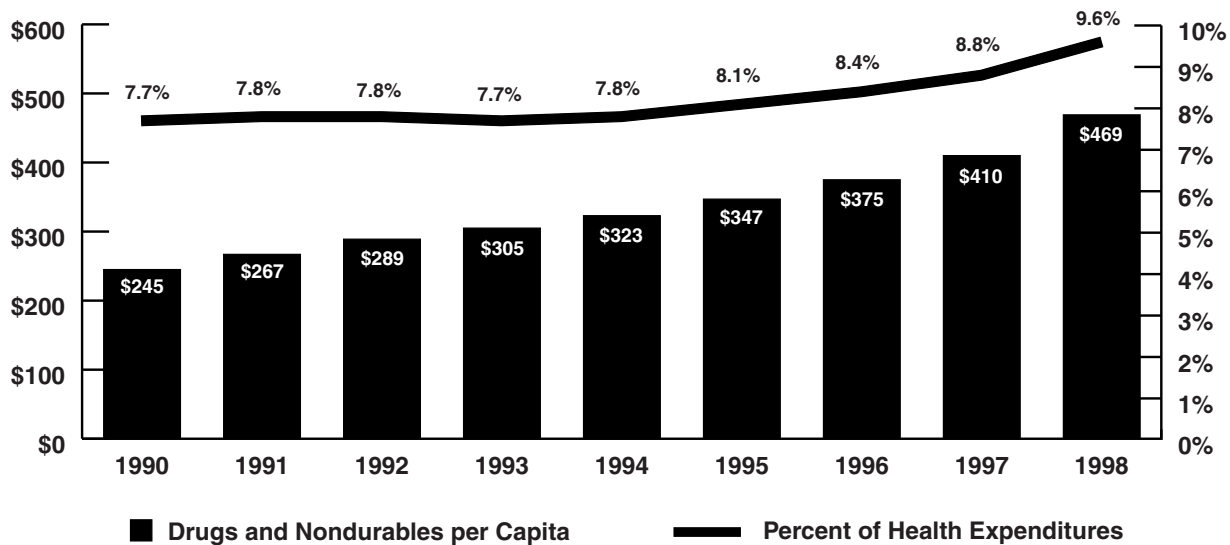


Source: Massachusetts Health Center, *Financial Trends Analysis, 2000, 2002*, Massachusetts League of Community Health Centers

Figure 3.24

- The total margin for Massachusetts community health centers (CHCs) from 1995 to 2000 declined almost six fold—from 5.7% to -0.3%—before rebounding in FY99. Similarly, the operating margin fell almost five fold—from 0.6% to -4.2%—before improving in FY99.
- The financial climate of Massachusetts CHCs followed the same downward trend experienced by acute care hospitals (see Figure 3.22 on page 57) and nursing homes (see Figure 3.23 on page 58).

Drug and Other Nondurable Medical Expenditures per Capita and Percent of Health Care Expenditures in Massachusetts (1990-1998)

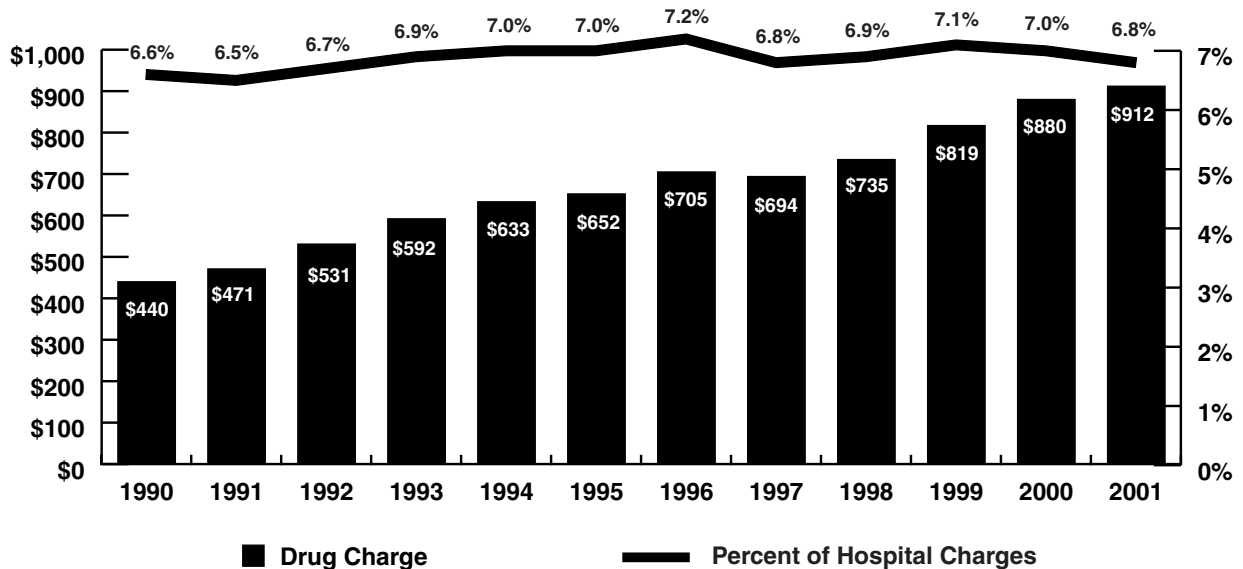


Source: "Massachusetts Health Expenditures, 1980-1998," July 17, 2000, Health Care Financing Administration, Office of the Actuary, National Health Statistics Group
 Notes: These numbers have not been adjusted for inflation. CMS only updates state-level information every five years.

Figure 3.25

- From 1990 to 1998, per capita drug expenditures in Massachusetts increased 91%. As a share of total health care expenditures, the percentage increased from 7.7% to 9.6%.
- The issue of increasing pharmaceutical costs has received attention at the state and national levels. State policies developed to address these concerns over the decade include the creation of the Pharmacy Program (for seniors) and the continued coverage of pharmaceuticals under the Massachusetts Medicaid program. These increases have also led to the introduction of a three-tiered payment policy among many HMOs that cover drugs, as well as renewed pressure on Medicare to provide pharmaceutical coverage to seniors.

Average Drug Charge per Acute Hospital Discharge and Percent of Total Hospital Charges in Massachusetts (1990-2001)



Source: Hospital discharge data, Massachusetts Division of Health Care Finance and Policy
 Note: These numbers have not been adjusted for inflation.

Figure 3.26

- The average prescription drug charge per acute hospital discharge doubled between 1990 and 2001. However, the pharmacy share of total charges during this time stayed relatively steady, reflecting the large increase in total hospital charges throughout this period.
- While the increased use of pharmaceuticals has most likely allowed shorter and fewer hospitalizations (see Figure 3.14 on page 49), the rapid increase in drug costs are a tremendous challenge to the entire health care system.
- These data include only drugs used during a hospital stay.

Endnotes for Chapter 3: Health Care Delivery System

1. Hospital-based long-term care facilities were included in our count of nursing homes and permanent bed levels.
2. Physician and supplier services: the supplier services include services and supplies provided by suppliers, such as medical supply and ambulance companies, independent laboratories and portable X-ray suppliers billing independently, voluntary health and charitable organizations, and pharmacies.